THE VETERINARY BULLETIN

Volume 47

Prepared by

Commonwealth
Bureau of Animal Health, Weybridge
1977

ISSN 0042-4854

2.3.D

© *Commonwealth Agricultural Bureaux 1978*

All rights reserved. No part of this publication may be reproduced in any form or by any means, electronically, mechanically, by photocopying, recording or otherwise, without the prior permission of the copyright owner.

The Executive Council of the Commonwealth Agricultural Bureaux is a signatory to the Fair Copying Declaration, details of which can be obtained from The Royal Society, 6 Carlton House Terrace, London, S.W.1.

published by

Commonwealth Agricultural Bureaux,
Farnham House, Farnham Royal,
SLOUGH SL2 3BN, UK.

printed by

Unwin Brothers Ltd., The Gresham Press, Old Woking, Surrey, UK.

COMMONWEALTH AGRICULTURAL BUREAUX

The Commonwealth Agricultural Bureaux (CAB) is a co-operative venture established by Commonwealth Governments to provide information and other specialised services for scientists and professional workers in agriculture and related fields. The organisation is controlled by an Executive Council composed of nominees of the various Commonwealth Governments, including one for the Dependent Territories. The following pages list the present members of the Executive Council, and Liaison Officers who form the primary link in the member country.

CAB has three main functions: a world agricultural information service, an identification service for entomology, mycology and helminthology, and a biological control service. CAB's information service is based on 24 abstract journals which, taken together, cover the whole range of agricultural science. Contemporary world literature in many languages is scanned for items worthy of noting by abstract or titles in the journals. Since 1973 all references have been made available in machine-readable form for batch searching and on-line retrieval. The data base contains approximately 600,000 records and is increasing by 12,000 per month. Other publications include technical periodicals, annotated bibliographies, review articles and books. An information retrieval service ensures that individual needs are met, and also supplies photocopies of source papers.

The work of CAB is largely carried out through a number of Institutes and Bureaux, each dealing with a particular aspect of agricultural science. Enquiries on scientific aspects of CAB work should be sent to the Director of the appropriate Bureau. Other enquiries should be sent to the Executive Director, CAB, at the address below, or to Liaison Officers in member countries.

Headquarters

Farnham House, Farnham Royal, Slough SL2 3BN, UK

Ag. Executive Director: N.G. Jones, DFC
Editorial Director: J.R. Metcalfe, MA, PhD
Scientific Adviser: E.K. Woodford, OBE, MSc, PhD

Institutes

Commonwealth Institute of Entomology, 56 Queen's Gate, London SW7 5JR
Director: N.C. Pant, MScAgr, DIC, PhD.
Commonwealth Mycological Institute, Ferry Lane, Kew, Richmond TW9 3AF
Director: A. Johnston, BSc, AICTA, FIBiol.
Commonwealth Institute of Biological Control, Gordon Street, Curepe, Trinidad, West Indies
Director: F.D. Bennett, BSA, PhD.
Commonwealth Institute of Helminthology, The White House, 103 St. Peter's Street, St. Albans, Herts.
Director: Miss S.M. Willmott, PhD, FIBiol.

Bureaux

Agricultural Economics, Dartington House, Little Clarendon Street, Oxford OX1 2HH
Director: J.O. Jones, MA.
Animal Breeding and Genetics, Animal Breeding Research Organization, The King's Buildings, West Mains Road, Edinburgh EH9 3JX
Director: J.D. Turton, BSc, MRCVS, DTVM.
Animal Health, Central Veterinary Laboratory, New Haw, Weybridge, Surrey
Director: R.M. Mack, FRCVS
Dairy Science & Technology, Lane End House, Shinfield, Reading RG2 9BB
Director: E.J. Mann, NDD, CDD.
Forestry, Commonwealth Forestry Institute, South Parks Road, Oxford OX1 3RD
Director: W. Finlayson, BSc.
Horticulture & Plantation Crops, East Malling Research Station, Maidstone ME19 6BJ, Kent
Director: D.J. O'D. Bourke, MA, DipAgr, FLS.
Nutrition, Rowett Research Institute, Bucksburn, Aberdeen AB2 9SB
Director: Miss D.L. Duncan, BSc, PhD.
Pastures & Field Crops, Hurley, Maidenhead SL6 5LR
Director: P.J. Boyle, MA.
Plant Breeding & Genetics, Department of Applied Biology, Downing Street, Cambridge CB2 3BX
Director: R.H. Richens, MA, PhD.
Soils, Rothamsted Experimental Station, Harpenden AL5 2JQ
Director: B. Butters, MSc, DipAgr, DTA, DIC, ARCS.

EXECUTIVE COUNCIL

(as at 1 September 1977)

Member	*Representing*
Mrs. J. GEORGE (Chairman)	Trinidad & Tobago
A. JAYASINHA (Vice-Chairman)	Sri Lanka
G.M.P. MYERS	United Kingdom
J.W. GREENWOOD	Canada
Dr. R.M. MOORE	Australia
T.N. TANDON	India
C.M. PALMER	New Zealand
THE FIRST SECRETARY	Ghana
K.S. TAN	Malaysia
THE FIRST SECRETARY	Nigeria
J.K. SHEKERIS	Cyprus
H.E. THE HIGH COMMISSIONER	Sierra Leone
Mrs. L.E. HOWELL	Tanzania
THE DEPUTY HIGH COMMISSIONER	Jamaica
THE AGRICULTURAL ATTACHE	Uganda
H.E. THE HIGH COMMISSIONER	Kenya
H.E. THE HIGH COMMISSIONER	Malawi
THE TRADE COMMISSIONER	Zambia
A.T. SALLAH	The Gambia
Mrs. P.N. WALDRON-MOORE	Guyana
H.E. THE HIGH COMMISSIONER	Botswana
J.G. FOKEER	Mauritius
M. SAHADEO	Fiji
M.R. OSMANI	Bangladesh
H.E. THE HIGH COMMISSIONER	The Bahamas
J.E. WHITELEGG	Dependent Territories

C. deLAET, Secretary, Commonwealth Science Council (Observer)

N.G. JONES, DFC (Acting Executive Director)

LIAISON OFFICERS

(as at 1 September 1977)

Contributing country	*Liaison Officer*	*Address*
United Kingdom	Under Secretary	Agricultural Research Council, 160, Great Portland Street, London W1N 6DT.
Canada	G.M. Carman, BSA, MSc, PhD.	Director, Information Division, Administration Branch, Canada Department of Agriculture, 1105 Sir John Carling Building, Ottawa, Ontario, K1A OC7.
Australia	P.F. Butler, MAgrSc.	Senior Assistant Secretary (Research) Commonwealth Scientific & Industrial Research Organization, PO Box 225, Dickson, ACT 2602.
New Zealand	G.W. Butler, MSc, Fildr, FRSNZ.	Assistant Director-General, Department of Scientific and Industrial Research, Private Bag, Wellington.

India	M.S. Swaminathan, BSc, BScAgr, PhD, FNA, FASc, FRS	Director-General, Indian Council of Agricultural Research, Krishi Bhavan, New Delhi 1.
Sri Lanka	C.R. Panabokke, BSc, PhD.	Deputy Director of Agriculture (Research), Central Agricultural Research Institute, Gannoruwa, Peradeniya.
Ghana	General Secretary	Council for Scientific & Industrial Research, PO Box M.32, Accra.
Malaysia	Permanent Secretary	Ministry of Agriculture & Co-operatives, Swettenham Road, Kuala Lumpur.
Nigeria	Permanent Secretary	Federal Ministry of Agriculture & Rural Development, Administration Division, P.M.B. 12613, Lagos, Nigeria.
Cyprus	Director-General	Ministry of Agriculture & Natural Resources, Nicosia.
Sierra Leone	C.T. Pyne, BSc, MSc, DipAgrSc.	Senior Lecturer, Njala University College, PMB Freetown.
Tanzania	Director of Agriculture	PO Box 9071, Dar-es-Salaam.
Jamaica	I.E. Johnson, PhD, MSc, DICTA, FEDI.	Chief Technical Officer, Ministry of Agriculture, PO Box 480, Kingston 6.
Trinidad & Tobago	Technical Officer (Crop Research)	Ministry of Agriculture, Lands & Fisheries, St. Clair Circle, Port-of-Spain, Trinidad.
Kenya	Under Secretary	Ministry of Agriculture, PO Box 30028, Nairobi.
Malawi	Director of Agricultural Research	c/o Secretary for Agriculture & Natural Resources, PO Box 30134, Capital City, Lilongwe 3, Malawi.
Zambia	Permanent Secretary	Ministry of Rural Development, PO Box RW.197, Lusaka.
The Gambia	Permanent Secretary	Ministry of Agriculture & Natural Resources, The Quadrangle, Banjul, The Gambia.
Guyana	Deputy Chief Agricultural Office (Research)	Ministry of Agriculture & Natural Resources, PO Box 1001, Georgetown.
Botswana	Permanent Secretary	Ministry of Agriculture, Private Bag 3, Gaborone.
Mauritius	B.D. Roy	Chief Agricultural Officer, Agricultural Services, Reduit.
Fiji	Permanent Secretary	Agriculture, Fisheries & Forests, Radwell Road, Suva.
Bangladesh	Dr. K. Badruddoza MAgr, PhD, DipGenPB.	Director, Bangladesh Agricultural Research Institute, 87 Pioneer Road, Kakrail, Dacca-2.
The Bahamas	Director of Agriculture	Ministry of Agriculture & Fisheries, PO Box 3028, Nassau. N.P.
Dependent Territories	R.K. Cunningham, BSc, PhD, FRIC.	Agricultural Adviser, Ministry of Overseas Development, Eland House, Stag Place, London SW1E 5DH.

COMMONWEALTH BUREAU OF ANIMAL HEALTH
NEW HAW, WEYBRIDGE, SURREY KT15 3NB, U.K.
Telephone: Byfleet 42826

Director
R. MACK, F.R.C.V.S.

Scientific Information Officers

R. Britt, B.Sc.
M.G. Gotts, M.A. (Cantab.)
M.R. Hails, B.Sc., DipAgricEcon
A.W. Johnson, B.V.Sc., M.R.C.V.S.
C.D. Johnson, C.Chem., M.R.I.C.
R.R. Say, D.M.V., B.A.

Abstractors Contributing to the Veterinary Bulletin

Diana Bonella, B.Sc.
Marion Cooper, B.Sc.
Carol R. Fear, B.A.
Krystyna Feezey, M.Sc.
T.E. Gibson, D.V.Sc., F.R.C.V.S.
Ann Grant, B.Sc.
J.D.B. Griffin, N.D.A., C.D.A.
H.E. Harbour, M.A., M.R.C.V.S.
W.T. Harrow, M.R.C.V.S.
G.B.S. Heath, B.Sc., F.R.C.V.S.
M. Hinton, B.V.Sc., Dip. A.H., F.R.C.V.S.
W. Houston, B.Sc.
S.N. Hussaini, B.V.Sc., Ph.D., M.R.C.V.S.
N. St. G. Hyslop, D.T.V.M., F.R.C.V.S.
Gillian R. Smith, B.Sc.
D.W. Tarry, B.Sc.
M. Tollemache
G.E. Tozer

Consultant Director
A.B. PATERSON, D.Sc., Ph.D., M.R.C.V.S., D.V.S.M., F.R.I.C.

The Commonwealth Bureau of Animal Health is one of 10 Bureaux and 4 Institutes which together form the Commonwealth Agricultural Bureaux, an organization sponsored by Commonwealth governments for the dissemination of information on agricultural research.

REVIEW ARTICLES

page

Type C botulism: the agent, host spectrum and environment
by H. Hariharan and W.R. Mitchell 95

The normal lymphatic system of the domestic fowl
by G.A. Firth 167

Pulmonary acariasis in Old World Monkeys
by James C.S. Kim 249

Bovine herpesviruses. Part I - Bovine herpesvirus 1
by E.P.J. Gibbs and M.M. Rweyemamu 317

Bovine herpesviruses. Part II - Bovine herpesviruses 2 and 3
by E.P.J. Gibbs and M.M. Rweyemamu 411

Congenital defects of the bovine central nervous system
by D.Y. Cho and H.W. Leipold 489

Caprine pneumonia
by M.O. Ojo 573

In-vivo diagnosis of bovine cysticercosis
by S. Geerts, V. Kumar and J. Vercruysse Jr. 653

Salmonella chlorae-suis infection in pigs with special reference to England and Wales
by P. Thomas 731

Nigerian plants that may cause poisoning in livestock
by N. Nwude and L.E. Parsons 811

Interpretation of the histopathological changes of porcine enzootic pneumonia
by K.W.F. Jericho 887

THE VETERINARY BULLETIN

Volume 47

CONTENTS

Serial Publications regularly scanned ...	1												
Abstracts													
Bacteriology and Bacterial Diseases ...	11	105	181	257	345	427	505	579	665	741	819	891	
Virology and Viral Diseases	21	114	190	265	354	433	515	592	677	753	829	901	
Mycoses and Mycotoxicoses	35	123	199	273	364	442	525	601	685	762	836	912	
Protozoology and Protozoal Diseases ...	37	123	200	273	365	444	526	603	687	763	837	913	
Arthropod Parasites	42	126	203	276	370	446	530	606	689	766	840	917	
Helminth Parasites	43	127	204	277	370	447	533	607	690	767	841	918	
Regional and General Pathology	47	132	207	281	375	451	537	611	695	773	846	922	
Neoplasms and Leucoses	54	138	214	286	380	455	542	620	700	778	851	928	
Nutritional and Metabolic Disorders ...	57	141	217	287	382	458	545	623	705	781	854	933	
Reproductive Disorders	60	144	220	291	385	460	548	626	708	783	856	934	
Toxicology	64	146	222	293	387	463	550	628	710	785	858	936	
Immunology	68	148	224	295	390	465	554	631	713	788	861	939	
Pharmacology and Therapeutics	70	149	225	296	392	466	555	632	714	790	863	940	
Physiology and Biochemistry	74	154	230	301	395	470	559	636	719	795	868	945	
Haematology	81	159	237	307	400	478	563	641	722	800	874	950	
Anatomy	82	160	239	308	401	480	565	642	723	802	876	952	
Livestock Hygiene	84	161	241	309	402	480	567	644	724	803	878	953	
Zootechny	85	161	241	310	402	481	567	645	725	804	878	954	
Radiations and Radioactive Isotopes ...	87	163	242	311	403	482	568	646	725	804	879	955	
Food Inspection	88	163	242	311	404	482	569	646	726	805	879	955	
Technique and Apparatus	89	163	243	312	404	483	569	647	726	805	880	955	
Surgery	90	164	244	313	406	483	570	648	727	806	881	956	
Veterinary Services	91	165	244	313	–	484	571	649	728	807	882	957	
Reports	92	165	245	314	407	484	571	649	728	808	882	957	
Book Reviews	92	165	245	314	408	485	571	650	729	808	882	958	
Author Index													961
Subject Index													999

Reprints of Review Articles

Post free £1.00 (UK) – £1.20 (overseas) per copy

Interpretation of the histopathological changes of porcine enzootic pneumonia, by K.W.F. Jericho (1977)
Nigerian plants that may cause poisoning in livestock, by N. Nwude and L.E. Parsons (1977)
Salmonella cholerae-suis infection in pigs with special reference to England and Wales, by P. Thomas (1977)
In-vivo diagnosis of bovine cysticeroosis, by S. Geerts, V. Kumar and J. Vercruysse (1977)
Caprine pneumonia, by M.O. Ojo (1977)
Congenital defects of the bovine central nervous system, by D.Y. Cho and H.W. Leipold (1977)
Bovine herpesviruses. Parts I and II, by E.P.J. Gibbs and M.M. Rweyemamu (1977)
Pulmonary acariasis in Old World monkeys, by J.C.S. Kim (1977)
A review of the normal lymphoid tract of the domestic fowl, by G.A. Firth (1977)
Type C botulism: the agent, host spectrum and environment, by H. Hariharan and W.R. Mitchell (1977)
Bovine babesiosis: a review, by R.S. Aragon (1976)
Bovine tuberculosis: a general review with special reference to Nigeria, by I. Alhaji (1976)
Porcine parovirus: a review, by H.S. Joo and R.H. Johnson (1976)
Equine infectious anaemia: the literature 1966-1975, by A.W. Johnson (1976)
Dermatophilosis in Northern Nigeria, by S.A. Bida and S.M. Dennis (1976)
Streptococcosis of swine, by R.D. Woods and R.F. Ross (1976)
Cell structure and function in the mammalian lung: the trachea, bronchi and bronchioles, by R.G. Breeze, E.B. Wheeldon and H.M. Pirie (1976)
Fog fever (acute pulmonary emphysema) in cattle in Britain, by R.G. Breeze, H.M. Pirie, I.E. Selman and A. Wiseman (1976)
A review of yersiniosis (Yersinia pseudotuberculosis infection), by M.J. Obwolo (1976)
Fixed-dose drug combinations and their use in veterinary medicine, by B.N.J. Parker (1976)
Bovine leptospirosis, by A. Amatredjo and R.S.F. Campbell (1975)
Pathology of the bovine testis and epididymis, by J.D. Humphrey and P.W. Ladds (1975)
Pathology of developmental and metabolic disorders of the skeleton of domestic chickens and turkeys. I. abnormalities of genetic or unknown aetiology, by C. Riddell (1975)
Pathology of developmental and metabolic disorders of the skeleton of domestic chickens and turkeys. II. Abnormalities due to nutritional or toxic factors, by C. Riddell (1975)
Survival and spread of pathogenic bacteria of veterinary importance within the environment, by C. Wray (1975)
Contagious respiratory disease in dogs, by H. Thompson, N.G. Wright and H.J.C. Cornwell (1975)
Nomenclature and taxonomy of Pasteurella multocida, by S.N. Hussaini (1975)
Actinomyces viscosus in relation to the other actinomycetes and actinomycosis, by A.A. Davenport, G.R. Carter and E.S. Beneke (1975)
Diseases of bovine reproduction associated with Mycoplasma infections, by A. Afshar (1975)
Physical and chemical properties of fowl immunoglobulins, by D.A. Higgins (1975)
Wild rodents in the transmission of disease to animals and man, by J.E. Mesina and R.S.F. Campbell (1975)
Hepatotoxic activity in plant poisons and mycotoxins in domestic animals, by S.E.I. Adam (1974)
The biochemistry of leucosis in cattle, by E.N. Abramova, V.S. Kondratev and I.A. Sytinskii (1974)
Elecrical stunning: a review of the literature, by R. Warrington (1974)
Avian adenoviruses, by S.M. Aghakhan (1974)
Myelin and dysmyelination in domestic animals, by J.A. Foulkes (1974)
Infectious necrotic hepatitis (black disease) of sheep, by H.O. Bagadi (1974)
Pathology of the accessory sex glands of the bull, by P.A. Bagshaw and P.W. Ladds (1974)
Developmental disorders of skeletal muscle in cattle, pigs and sheep, by H.J. Swatland (1974)
Pathology of listeric infection in domestic animals, by P.W. Ladds, S.M. Dennis and C.O. Njoku (1974)
A bibliography of some diseases of marine mammals, by L.E. Mawdesley-Thomas (1973)
Preparation of vaccines against enzootic abortion of ewes. A review of the research work at the Moredun Institute, by A. Foggie (1973)
Toxicity for livestock of organofluorine compounds present in Dichapetalum plant species, by B. Vickery and M.L. Vickery (1973)
Aujeszky's disease in pigs, by A. Baskerville (1973)
Syndactyly in cattle, by H.W. Leipold, S.M. Dennis and K. Huston (1973)
Animal schistosomiasis in Africa: a review of Schistosoma bovis and Schistosoma mattheei, by M.F. Hussein (1973)
Histopathology of some viral infections of the central nervous system of the domestic fowl, by M. Pattison (1973)
Plant poisoning in animals – a bibliography, by T.D. Crane (1973)
Cheyletiella infestation in small animals, by M.A. Gething (1973)
Bovien abortion associated with Corynebacterium pyogenes, by M. Hinton (1972)
A review of drug hepatotoxicity in animals, by S.E.I. Adam (1972)
Aspects of infection, by E. Mitscherlich (1972)
Infectious ovine abortion in Australia, by S.M. Dennis (1972)
Testicular abnormalities and spermatogenesis of the ovine and other species, by D. Watt (1972)
Intensive beef production – barley beet, by P. Mullen (1972)
Salmonella abortion in cattle, by M. Hinton (1971)
Bovine ephemeral fever: a review, by G.W. Burgess (1971)

Minimum Order: A minimum order against credit account is £2.00 (UK) and £3.00 (Overseas).
Please enclose payment with orders of less value.

Available from:
COMMONWEALTH BUREAU OF ANIMAL HEALTH
Central Veterinary Laboratory,
Weybridge KT15 3NB, Surrey, England.